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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,880

06/05/2006

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EXAMINER

CHEN, XIAOLIANG

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,880	Applicant(s) KATAOKA ET AL.	
	Examiner XIAOLIANG CHEN	Art Unit 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7 and 8 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment

1. Acknowledgement is made of Amendment filed 06-09-08.
2. Claim 1 is amended.
3. Claims 2, 3, 5, and 6 are canceled.
4. Claim 15 is added.

Claim Objections

5. Claim 1 is objected to because of the following informalities: In the new amended Claim 1, Applicant changed “an insulating film” to “a polyimide film”, but in the line 10 of claim 1, there is “the insulating film” still exists. It may be a typographic error. Appropriate correction is required.

Response to Arguments

6. Applicant's arguments filed 06-09-08 have been fully considered but they are not persuasive.

Applicant's arguments and responses:

Yang patent discloses an additive method, which is different from the subtractive method described in the claim.

The argument is not persuasive because

The Yang et al. patent is used mostly for the materials of the claim, and combined with the methods of Mahdavi and Ogasawara et al., which are as same as in the claim, and the combined teaching meets all the limitations of the material and the method described in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 4, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US6071597) in view of Mahdavi (US20050003673) and Ogasawara et al. (US5044073).

Re claim 1, Yang et al. show and disclose

A process for manufacturing a printed wiring board, which process comprises

preparing a laminated film comprising a polyimide film (polymeric film, ... the polyimide is preferred. [col. 7, line 23-29]) and a copper layer (The conductive layers are typically formed from conductive metals such as tin, gold, silver, copper, chromium and the like [col. 7, line 37]) provided on at least one surface of the polyimide film with a sputtered metal layer (8, fig. 9) form from nickel, chrome or an alloy thereof (selected from the group consisting of silicon, oxygen, nitrogen, sulfur, titanium, chromium, copper, fluorine and nickel [claim 9]) in

between, selectively etching (plating resist laminating, resist exposing, developing, and etching [col. 16, line 10]) the copper layer and the sputtered metal layer of the laminated film to produce a wiring pattern (fig. 9),
Yang et al. does not disclose

1) treating the laminated film with a first treatment liquid capable of dissolving nickel of the sputtered metal layer, and treating with a second treatment liquid capable of dissolving chrome of the sputtered metal layer,

2) the second treatment liquid also capable of eliminating the sputtered metal layer in the polyimide film to remove a superficial surface of the insulating film exposed from the wiring pattern together with the residual sputtered metals in the superficial surface.

Mahdavi teaches a method including

1) treating the laminated film with a first treatment liquid capable of dissolving nickel of the sputtered metal layer (A wet etch having a nickel soluble compound [0025]), and treating with a second treatment liquid (wet etch [0026]) capable of dissolving chrome of the sputtered metal layer (chrome etch [0026]),

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the treatment liquids as taught by Mahdavi to treat the device of Yang et al., in order to etch the metal layer of nickel and chrome more efficiently.

Ogasawara et al. teaches a method including

2) the second treatment liquid also capable of eliminating the sputtered metal layer in the insulating film to remove a superficial surface of the insulating film exposed from the wiring pattern together with the residual sputtered metals in the superficial surface. (This etching dissolves a thin surface layer of the resin board and removes residual chemicals from the resin board. This etching can be accomplished by the aid of any solvent which dissolves the resin board. [col. 2, line 50]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the etching solvent as taught by Ogasawara et al. to the second treatment liquid of Yang et al., in order to make the device more reliable by eliminating the sputtered metal spots left after the device is treated with the second treatment liquid.

Re claim 4, Yang et al. show and disclose

The process according to claim 1, wherein a surface of the insulating film, which comprises a polyimide film (polyimide film [col.6, line 19]),

Yang et al. discloses the claimed invention except for the exposed from the wiring pattern is removed to a depth of 1 to 100 nm with use of the second treatment liquid.

It was well known in the art at the time the invention was made that the depth of the etching not only depends on the etching liquid but also depends on the time of the etching and the temperature of the etching.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the second treatment liquid to etch the polyimide film for a depth of 1 to 100 nm by controlling the time and the temperature, and it was well known in the art at the time the invention was made that etching a depth range of 1 to 100 nm would be enough to eliminate the sputtered metal spots left on the surface of the insulating film.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use of the second treatment liquid to etch the polyimide film for a depth of 1 to 100 nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Re claim 7, Yang et al. show and disclose

The process according to claim 1, wherein the process further comprises plating (The copper side of the laminate is then further plated to desired circuit thickness [col. 16, line 47]) the wiring pattern (desired patterns are obtained [col. 16, line 45]).

Re claim 8, Yang et al. show and disclose

The process according to claim 7, wherein the plating is selective plating (procedures such as plating resist laminating, resist exposing, developing, and plating. [col. 16, line 10]) of the conductive metal layer that forms the wiring pattern.

Allowable Subject Matter

9. **Claim 15 is objected** to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 15 is allowable over the art of record because the prior art does not teach or suggest that a process for manufacturing a printed wiring board including:

the laminated film is treated with the first treatment liquid including mixtures of approximately 5 to 15 % by weight each of sulfuric acid and hydrochloric acid at temperatures of 30 to 55° C over a period of 2 to 40 seconds and further treated with the second treatment liquid including aqueous potassium permanganate/KOH solution having the potassium permanganate concentration of 10 to 60 g/l at temperatures of 40 to 70° C over a period of 10 to 60 seconds.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US-20020148733 US-20050258522 US-5130192
US-6620306 US-6877428 US-5334314.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2859

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIAOLIANG CHEN whose telephone number is (571)272-9079. The examiner can normally be reached on 7:00-5:00 (EST), Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800, ext 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2859

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean A. Reichard/
Supervisory Patent Examiner, Art Unit 2841

Xiaoliang Chen
Examiner
Art Unit 2841